REPORT DOCUMENTATION

Public reporting burden for this collection of information is estimated to average 1 hou
gathering and maintaining the data needed, and completing and reviewing the collectic
collection of information, including suggestions for reducing this burden, to Washingto
Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Managemen

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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED

4. TITLE AND SUBTITLE
A STUDY TO DETERMINE THE UTILIZATION DEMOGRAPHICS OF THE EMERGENCY ROOM AT MARTIN ARMY COMMUNITY HOSPITAL, FORT BENNING, GEORGIA

5. FUNDING NUMBERS

6. AUTHOR(S)

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FORT BENNING, GEORGIA

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
US ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
BLDG 2841 HSHA MH US ARMY BAYLOR PGM IN HCA
3151 SCOTT ROAD
FORT SAM HOUSTON TEXAS 78234-6135

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
11a-87

DTIC
ELECTE
MAY 06 1994
S G D

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

Today's military hospital is challenged to increase its efficiency while improving access. The challenge is to provide care to more people and do it in the most efficient manner possible. Several military health care initiatives are planned, or in some cases have been recently implemented, to meet this challenge. According to the Patient Admnistration Division, Martin Army Community Hospital (MACH) in FY 1986 there was a total of 85,318 outpatient visits to the MACH Outpatient Clinic (OPC) and Emergency room (ER). ER visits accounted for 54,792 or 64% of the total ER and OPC outpatinet visits counted. Through July FY 87, there were 68,501 OPC and ER visits counted. During this time, ER visits accounted for 44,996 or 66% of the total visits counted. According to these figures, the reported FY 87 ER utilization was higher than the FY 86 utilization even though the FY 87 utilization data represented only nine months. Higher ER utilization rates translate to greater consumption of costly ER resources. Are these increases consistent with a true ER need? In an environment of ever increasing resource constraints, health care planners must examine their organizations to determine how resources are being consumed.

14. SUBJECT TERMS	15. NUMBER OF PAGES
OUTPATINET CLINIC; DEMOGRAPHICS OF EMERGENCY ROOM; SPACE UTILIZATION	Total 52
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
N/A	N/A	N/A	UL

A STUDY TO DETERMINE THE UTILIZATION DEMOGRAPHICS OF THE EMERGENCY ROOM AT MARTIN ARMY COMMUNITY HOSPITAL, FORT BENNING, GEORGIA

A Graduate Research Project Submitted to the Faculty of Baylor University In Partial Fulfillment of the Requirements for the Degree

of

Master of Health Administration

by

Major Robert E. Alexander, MSC

June 1991

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Introduction

Today's military hospital is challenged to increase its efficiency while improving access. The challenge is to provide care to more people and do it in the most efficient manner possible. Several military health care initiatives are planned, or in some cases have been recently implemented, to meet this challenge. These initiatives strive to improve authorized beneficiaries' access to health care services. In order to most efficiently implement these initiatives and operate other health care services, military health care planners and decision makers need to determine factors that influence utilization of health care services. Only then can military health care service organizations and the services they offer be adjusted to maximize their efficiency. These adjusted organizations and services then can be used to influence military health care consumers' utilization behavior.

According to the Patient Administration Division, Martin Army Community Hospital (MACH), in Fiscal Year (FY) 1986 there was a

total of 85,318 outpatient visits to the MACH Outpatient Clinic (OPC) and Emergency Room (ER). ER visits accounted for 54,792 or 64 percent of the total ER and OPC outpatient visits counted. Through July FY 87, there were 68,501 OPC and ER visits counted. During this time, ER visits accounted for 44,996 or 66 % of the total visits counted. According to these figures, the reported FY 87 ER utilization was higher than the FY 86 utilization even though the FY 87 utilization data represented only nine months.

Higher ER utilization rates translate to greater consumption of costly ER resources. Are these increases consistent with a true ER need? In an environment of ever increasing resource constraints, health care planners must examine their organizations to determine how resources are being consumed.

This study will examine MACH's ER utilization. The basic question asked by the study is "Who uses the ER ?" The answer to this question hopefully will assist the hospital commander in ER health care services planning and decision making.

Problem

To determine the utilization demographics of the MACH ER in order to provide the commander with relevant emergency health care services planning data.

Definitions

- Emergent cases involve patients with conditions which require immediate medical attention. The condition is acute and potentially threatening to life or function. A delay in treatment is potentially harmful to the patient's well being (Weinerman, Ratner, Robbins, & Lavenhar 1966).

- Major trauma cases are those which are emergent and acute. Automobile accident injuries, pedestrian-automobile injuries, gunshot wounds, and severe burns are included in this category (Parker, 1978).

- Other emergency cases are described as acute, emergent, and nonemergent, but the patient is admitted to the hospital. Acute asthma attacks, acute urinary and gastrointestinal illnesses,

pediatric emergencies, acute allergic reactions to penicillin, sickle cell crisis, cardiac emergencies, acute labor, and drug overdoses are in this category (Parker, 1978).

- Primary care is a highly personalized form of medical care delivery. It involves the following functions: patient point-of-entry into the health care system, continuous patient care during sickness and health, comprehensive care that derives its functional content from traditional major medical disciplines, coordinated care to insure proper management of all the patient's health care needs, and continuous responsibility for individual patient follow-up and community health (Rakel, 1984).

- Emergency Room is an organized hospital facility staffed for around the clock operations to provide unscheduled outpatient services. The services are provided to patients whose conditions are considered to require immediate care (American Hospital Association, 1985).

Objectives

- Conduct ER utilization literature review.
- Study and analyze MACH's ER organization and operation.
- Observe thirty hours of MACH's ER operations. Fifteen hours will be spent observing between the hours of 7:00 am to 8:00 pm and the remaining fifteen hours will be spent observing between the hours of 8:00 pm to 7:00 am.
- Conduct a random selection of MACH's ER records. Three hundred and twentyfive records, from a successive 30-day period, will be randomly selected and retrospectively reviewed.
- Stratify and summarize ER utilization data.
- Develop inferences from utilization data relevant to factors influencing utilization.

Criteria

- The findings of this study will provide the Commander, MACH with relevant objective data to be used in health care services planning.
- The ER utilization by authorized beneficiaries will not be

encumbered by this study.

•A panel of three Emergency Room physicians will evaluate the randomly selected ER patients' records. Definitions discussed earlier in this paper will be used by this panel to effect its evaluation and categorize ER patient visits.

Assumptions

•The beneficiary population will not experience significant demographic or health care services utilization behavior changes.

•MACH will continue to operate an ER.

•MACH's ER staffing will continue at present levels.

•There will not be any significant changes in laws or regulations relevant to the provision of DOD ER services.

Limitations

•The study will only examine data collected over a 30-day period. Seasonal or cyclic variation may bias the results.

•The study will only examine beneficiaries seeking ER care at MACH's ER. Some beneficiaries needing ER services may fail to seek

care at MACH's ER or may seek care from other sources within and outside DOD

- Generally, young dependents will not have a social security number, which may bias the ER records random selection process. The sponsor's social security number will be used to control the selection of these dependents.

Literature Review

The literature indicated that the ER's role in American health care has changed. In the past, the ER's role was to provide emergent care when there was possible loss of life or function. Two views of ER utilization have evolved: traditional and contemporary. The traditional view held sacred the ongoing patient-private physician relationship and promoted the use of the ER for true emergencies, true emergencies referring to situations that demand immediate care or that can not wait until the next day (Parker, 1978). The contemporary view argued that the availability of medical services when needed was more important than the ongoing patient-private physician relationship.

In 1978, Parker noted the ER's primary care caseloads had increased to a point where they constituted the majority of ER cases (Parker, 1978). Dr. Richard Bassin (1979), a contributing editor of Hospital Physician, in an editorial titled, "Transforming the ER Through Primary Care Services," wrote the following: "Elmhurst, like most community teaching hospitals, truly did offer a broad range of services to increasing numbers of patients who thought of the ER as their family physician. We were the family doctor for much of the community". The American Hospital Association's (AHA) annual Hospital Statistics reported that between 70 and 81% of the 81 million emergency visits in America reported were for non-emergent health care problems (American Hospital Association, 1980). This evolution toward primary care was further evidenced by the American College of Emergency Physicians' (ACEP) guidelines (1982) for determining what constitutes an appropriate ER visit. These guidelines included a listing of 13 clinical circumstances and an introductory statement. For purposes of argument, this introductory

statement is provided as it appeared in the 1982 ACEP's Board of Directors' ER utilization guidelines:

> We feel that a patient has made an appropriate visit to an emergency department when: An unforseen condition of a pathophysical or psychological nature develops which a prudent lay person, possessing an average knowledge of health and medicine, would judge to require urgent and unscheduled medical attention most likely available, after consideration of possible alternatives, in a hospital emergency department.

The ACEP's guideline allowed for a broader definition of the emergent case. Patient perceptions, which were allowed broad freedom, were important in determining what constituted an appropriate visit. Hellstern (1987) noted that emergency medicine practioners had redefined the term emergency. It no longer meant what it had in the past. Instead, emergency meant whatever the patient said it was. Hellstern identified two factors that initiated the change: family practice specialty development and third party payer reimbursement policies (Hellstern, 1987). General practioners were becoming family practice specialist and were becoming less available to their

patients outside of normal office hours (Hellstern, 1987). Third party payers would reimburse treatment provided in an ER but would not reimburse health care providers or health care facilities for the same treatment when provided in a primary care setting (Hellstern, 1987).

From 1972 to 1984, the percentage of hospitals with ER's increased from 77% to 90%, respectively (Hospitals, 1985). The reasons for this increase was to attract patients and to support physician practice pattern changes. The ER was an access point for the patient into the hospital. Statistics indicated that almost 20% of the patients presenting in the ER were admitted (Hospitals, 1985). The ER replaced yesterday's 24-hour on-call doctor and provided a credible, responsive, and convenient backup source of health care (Hellstern, 1985).

Utilization studies of civilian emergency rooms identified consumer demand as perhaps the basic force underlying ER utilization patterns. ER utilization was thought

to reflect consumer demand and to be based on the economic concept of utility. Looney (1978) pointed out the American consumer was accustomed to convenience and had learned that the hospital ER was often the only source of round-the-clock medical care (Looney, 1978). The ER was very accessible, offering 24-hour medical care to patients who believed their conditions to be urgent and did not choose or did not know of alternative sources of care (Parker, 1978). Patients used the ER as a source of care because they believed it would provide them the greatest overall satisfaction (Stratmann and Ullman, 1975). Research demonstrated that a patient's attitude heavily impacts on his decisions concerning health care services source selection and health care services utilization (Powers, et al., 1983).

Soon consumer demand for ER care significantly increased the ER's patient volume (Hellstern, 1987). ER severity triage was necessary to insure the truly emergent

patient was treated quickly; however, severity triage created a second class ER patient (Hellstern, 1987). For these second class ER patients the ER was no longer convenient or responsive. Instead, it represented a long wait.

In response to increased ER volume and growing ER patient dissatisfaction, the American health care industry developed alternative sources of care: free standing emergency care centers and ambulatory care centers. These alternative sources of care were responsible for a 7.1% decline in ER utilization (adjusted for population changes) measured from 1981 to 1984 (Hellstern, 1987). At the same time, these alternative sources of care experienced a tenfold increase in patient visits: 2.5 million to over 25 million (Hellstern, 1987). The AHA estimated between 25 and 30% or 80 million of the 282 million outpatient visits reported in 1985 were ER visits (American Hospital Association, 1986). In 1980, the AHA reported over 81 million ER visits (American Hospital

Association, 1980) These statistics indicate a decline of over 1 million ER visits in America from 1979 to 1985. The literature indicated as alternative care sources, such as primary care physicians, increased there was a decrease in ER utilization (Buesching, 1985). Alternative care sources are not likely the sole cause of the decline in ER utilization in America. In the civilian sector, factors such as practice pattern changes and others have in some way contributed to the decline (Yunker,et al., 1985).

The trends in ER utilization are significant. First, ER's can expect fewer primary care visits because alternative care sources will attract many of the primary care seeking patients. The ER will most likely become the trauma treatment site of the general population and the primary care treatment site of the medically indigent whose generally poor health status will complicate the provision of their primary care ; therefore, the ER's patient acuity level for visits made will likely be higher

(Rosen, 1987). Recent law stipulates that medically indigent emergent patients, whose care can be very expensive, can not be refused treatment when presented in an appropriate ER. The higher patient acuity level will demand increased technology to satisfy professional standards and to protect emergency care providers from malpractice litigation. There will be a decrease of insured and self paying primary care patients, who will gain their care through alternative sources. In order to survive, ERs will need to become more competitive and economic in their orientation. Alternative care sources are competitive and economic in nature. They market to their consumers in numerous ways: service site location, service site appearance, public image, and professional credibility. All of this is done with an economic eye focused on cost and expected profit (Johnson, 1987). In summary, ER care will become increasingly more expensive because of numerous pressures: modern technology, malpractice litigation, indigent medical care and

others.

There has been an unfair division of Torrence and Yedvab's (1970) three functions of ER's in providing patient care: acting as trauma treatment centers, providing primary care to the urban poor, and offering physician substitutes when personal physicians are unavailable. ER's are saddled with acting as trauma treatment centers and providing primary care to the urban poor. Trauma patients generally require costly resources to treat (Hillstern, 1987). Often, the trauma patient is medically indigent but the ER must treat the emergent patient regardless of his/her indigent status. Generally, indigent emergent care funding covers only a fraction of the real cost. The urban poor generally can't afford private physicians or alternative sources of care; therefore, the second class ER patient status and its associated problems impacts less on the utilization attitudes of the urban poor (Hillstern, 1987).

Alternative care sources have capitalized on the function of offering physician substitutes when personal physicians are unavailable (Hildetch, 1980). Generally, these patients seeking a substitute for their personal physician have medical insurance or self-pay for their medical care. Also, they are generally seeking primary care where the patient acuity is low, resources needed are inexpensive, and technologic involvement is less.

The Army's PRIMUS Clinic is an alternative health care source within the military system. In November 1984, The Surgeon General approved a private contractor PRIMUS program and established program objectives and criteria. Enhance beneficiary access to the military health care system, increase overall access to healthcare, and improve beneficiary satisfaction were three of The Surgeon General's objectives. The program's criteria concerned convenient location, qualified professional staff, facility appearance, and a comprehensive

marketing strategy. The PRIMUS clinic design is to provide convenient, high quality primary care in an attractive facility and use marketing to sell the clinic. According to Hudak and Mouritsen, it is probable that traditional military health care services will not be successful in competing against PRIMUS and will lose outpatient workload

Generally, patients are concerned with their well being and believe their ER visits are appropriate and emergent (Powers, et al., 1983). The literature suggests that patient perception and convenience are major factors influencing ER utilization. The civilian or military patient will utilize the source that he perceives to provide quality and convenient care.

If ER utilization demographics can be determined, the ER patient can be identified and a better understanding of his ER utilization behavior will follow. These patients can then be directed, by influencing their attitudes and perceptions, to the appropriate health care service site, or health care

organizations can change their health care services structure (Powers et al., 1983).

Methodology

This study will involve a retrospective demographic examination of MACH's ER utilization. A simple random selection without replacement of ER records collected over a 30-day period will be accomplished using the last two digits of the patient's social security number and a table of random numbers. For this study 325 records will be selected.

Once the records are selected a data base will be established. Six user characteristics and five ER utilization factors will be recorded from the records and incorporated into the data base for analysis. Noted data will be used to determine ER utilization demographics. These characteristics and factors are listed below.

ER USER CHARACTERISTICS

1. Patient's complaint category
2. Age
3. Sex
4. Military Rank
5. Status
6. Admission status

ER UTILIZATION FACTORS

1. Distance traveled to the ER
2. Mode of transport to the ER
3. Average waiting time
4. Average treatment time
5. Visit arrival time

The purpose of ER user characteristic data is to develop a demographic profile of who uses the ER. ER utilization factors concern data which the researcher believes to influence the patient utilization of the ER. This information, when analyzed, will provide insight concerning ER health care issues.

The patient's healthcare problem will be categorized as urgent or nonurgent. Urgent patients are those patients presenting with emergent health problems. Nonurgent are those patents presenting with primary care health problems.

Age and sex of ER patients will be noted from selected records. Age data will be grouped into six class intervals: ≤ 14, $14 \geq 20$, $20 \geq 25$, $25 \geq 30$, $30 \geq 35$, $35 \geq 40$, > 40. Sex will be noted from selected records and entered in the database.

Patient status will be categorized as the following: active duty, active duty dependent, retired and their dependents, and other.

The "other" category is needed to capture DOD civilian employees 'on-the-job' emergencies, foreign military personnel assigned to Fort Benning and civilian emergency data.

Military rank will be grouped into five class intervals. The active duty, active duty dependent, and retired will be noted as follows: E-1 through E-5, junior enlisted (JE); E-6 through E-9, senior enlisted (SE); WO-1 through O-3, officer company grade (OC), and O4 and higher, officer field grade (OF). The rank of the other status will be noted as 'Oth'. Some 'oth' status patients will be active duty dependents or retired who are DOD civilian employees; however, for the purpose of this study these ER patients will be noted in the study's database as Oth for rank and status because the purpose of their visit is related to their DOD civilian employee status.

A map of Fort Benning and the surrounding area will be used to determine distance traveled to the MACH ER. Using MACH as the center, concentric circles will mark 5, 10, 15 and more-than 15 mile distances. In some cases, this will not reflect the actual distances

the patient traveled to the ER. For example, a patient may be injured somewhere other than home and be transported to the emergency room for treatment. However, the patient's home address will be used to designate the distance traveled to the ER.

The mode of transport will be recorded as privately-owned vehicle (POV), ambulance (AMB) or other (OTH). This data will be noted from the record and included in the database.

Average waiting time will be computed by determining the time between the patient's recorded arrival time and the time the patient is first seen by a physician. The waiting time of the records sampled will be averaged to determine an average waiting time for each nonurgent and urgent category.

Average treatment time will be computed by determining the time between the recorded time seen by a physician and the recorded time the patient is released from the ER. The treatment time of the sampled records will be averaged to determine an average treatment time for nonurgent and urgent categories.

Average total time will be computed by determining the time between the patient's arrival time and the recorded time the patient is released from the ER. The total time of each sampled record will be averaged to determine an average total time for nonurgent and urgent categories.

The visit time is the recorded arrival time of the ER patient. Visit time will be organized into six 4-hour class intervals. These class intervals are as follows: 0001-0400, 0401-0800, 0801-1200, 1201-1600, 1601-2000 and 2001-2400. At times, for purposes of dicussion and analysis, three 8-hour class intervals will be used.

The database will be used to develop demographic information concerning MACH ER utilization. The information will be presented on the following tables:

Table 1. ER User Characteristics

	ALL	NONURGENT	URGENT
AGE			
≤ 14			
14 ≥ 20			
20 ≥ 25			
25 ≥ 30			
30 ≥ 35			
35 ≥ 40			
40 >			
SEX			
MALE			
FEMALE			
RANK			
OF			
OC			
SE			
JE			
OT			
STATUS			
AD			
ADD			
RET			
OTH			
ADMITTED			

Table 2. ER Utilization Factors

	ALL	NONURGENT	URGENT
Distance Traveled			
5≤			
5≥10			
10≥15			
> 15			
Transportation			
POV			
AMB			
Avg. Waiting Time			
Avg. Treatment Time			
Avg. Total Time			
Visit Time			
0000-0400			
0401-0800			
0801-1200			
1201-1600			
1601-2000			
2001-2400			

TABLE 3. UTILIZATION BY AGE AND STATUS

ALL

	≤ 14	14 ≥ 20	20 ≥ 25	25 ≥ 30	30 ≥ 35	35 ≥ 40	> 40
AD							
ADD							
RET							
OTH							

NONURGENT

	≤ 14	14 ≥ 20	20 ≥ 25	25 ≥ 30	30 ≥ 35	35 ≥ 40	> 40
AD							
ADD							
RET							
OTH							

URGENT

	≤ 14	14 ≥ 20	20 ≥ 25	25 ≥ 30	30 ≥ 35	35 ≥ 40	> 40
AD							
ADD							
RET							
OTH							

TABLE. 4 UTILIZATION BY SEX AND STATUS

	ALL		NONURGENT		URGENT	
	M	F	M	F	M	F
AD						
ADD						
RET						
OTH						

TABLE 5. UTILIZATION BY DISTANCE TRAVELED AND STATUS

	< 5	5 > 10	10 > 15	> 15
ALL				
AD				
ADD				
RET				
OTH				
Nonurgent				
AD				
ADD				
RET				
OTH				
URGENT				
AD				
ADD				
RET				
OTH				

TABLE 6. UTILIZATION BY VISIT TIME AND STATUS

		NONURGENT	
	0000-0800	0801-1600	1601-2400
AD			
ADD			
RET			
OTH			
		URGENT	
	0000-0800	0801-1600	1601-2400
AD			
ADD			
RET			
OTH			

TABLE 7. UTILIZATION BY ARRIVAL TIME AND RANK

	NONURGENT		
	0000-0800	0801-1600	1601-2400
OF			
OC			
SE			
JE			
OTH			
	URGENT		
	0000-0800	0801-1600	1601-2400
OF			
OC			
SE			
JE			
OTH			

Discussion

THE MACH ER is a fully staffed Class II ER which operates 24-hours per day. According to the Fort Benning Director of Resource Management there is a local population of approximately 105,000 DOD beneficiaries for the ER to support. The local population is comprised of the following: 27,500 active duty (16,500 permanent party and 11,000 students), 11,500 retired, 57,330 active and retired dependents and 8,370 civilian employees. The Director of Engineering

and Housing reports 4,205 military families live on post and 6,367 families live in off-post housing. Additionally, 11,000 soldiers live on post in some form of government housing. Generally, 26,000 or 25% of these beneficiaries lives on the installation. During December 1988, the ER was utilized by 5,210 beneficiaries. Based on this utilization, the average daily visits to the ER were 178 visits per day. At this monthly rate, 62,520 visits would be expected for the year. In a year, 59.5% of the total local population number would use the ER.

The ER is a part of the main hospital building which is centrally located on the installation. The hospital is conveniently located to highway and road systems which facilitate convenient access. The hospital is serviced by military and civilian buses and taxis; however, these modes can be inconvenient and/or expensive. Additionally, the ER has a fully staffed and operational 24-hour emergency ambulance service and the hospital, which is supported by an Army air ambulance unit, has a day or night helicopter landing pad.

This study represents a retrospective demographic investigation of MACH ER utilization. In order to study ER utilization, a random sample of the ER records was accomplished. Three hundred and twentyfive records were placed in a data base for analysis and comparison. Six ER user characteristics were selected from sampled records for the data base: (1) category of the health problem, (2) age, (3) sex, (4) military rank, (5) status and (6)

admission. Also, five utilization factors were identified from selected records and included in the data base: (1) distance traveled (2) transportation mode, (3) average waiting time, (4) average treatment time and (5) visit time. The sample contained a wide range of ER utilization data, and the collected data was used to formulate observations concerning MACH's ER utilization.

Unique military issues may influence military ER utilization. For example, unlike the civil sector there are no reimbursement barriers. To receive care, a DOD beneficiary only needs to present valid identification to prove entitlement to care. The transient nature of the military is another issue. Soldiers move for training and jobs, and their moves are frequent. This transient character inhibits long-term patient provider relationships because it is unlikely the soldier and his dependents will have an established relationship for health care such as membership on a family practice panel. Therefore, the transient military members may use the ER for their primary source of health care. Military training programs may minimize time available for a soldiers to seek health care for themselves or their dependents. Fundamentally, these military issues are issues concerning availability and access.

Although these are unique military issues, the literature did suggest similar availability and access factors. First, the availability of the medical services to the users when needed is

important. Second, the user's ability to satisfy his demand and realize utility of the health care system. Third, the patient, who is interested in his well being uses medical services that provide quality health care and convenient use.

Table 1 depicts MACH ER user demographics. It shows that only 23 records or 7% of the 325 sampled were coded as urgent while nonurgent records total 302 or 93% of the sample. If the rate is assumed true for the population, 364 of the 5,210 visits to the ER for the selected month were coded urgent. The age group 14 years and younger is the most frequent user of the ER for urgent and nonurgent categories. Over 50% of the urgent utilization is by beneficiaries 20 years of age or younger. Clearly, more males utilize the ER in both categories, with males having a significantly higher urgent utilization. Junior enlisted use the ER more than any other military rank; however, the urgent utilization is greatest for senior enlisted while field grade officers use the ER less frequently than any military rank. Active duty dependents are the primary nonurgent and urgent users of the ER. Finally, the admission rate for urgent utilization is 3 1/2 times greater than nonurgent utilization.

Table 1. ER User Characteristics

	ALL		NONURGENT		URGENT	
SAMPLE	325	100%	302	93%	23	7%
AGE						
< 14	99	30%	90	30%	9	39%
14 ≥ 20	59	18%	53	18%	6	26%
20 ≥ 25	53	16%	49	16%	4	17%
25 ≥ 30	31	10%	31	10%	0	0%
30 ≥ 35	27	8%	27	9%	0	0%
35 ≥ 40	10	3%	9	3%	1	4%
40 >	46	14%	43	14%	3	13%
SEX						
MALE	181	56%	164	54%	17	74%
FEMALE	144	44%	138	46%	6	26%
RANK						
OF	6	2%	6	2%	0	0%
OC	28	9%	25	8%	3	1%
SE	101	31%	91	30%	9	2%
JE	155	48%	148	49%	8	2%
OT	35	11%	32	11%	3	1%
STATUS						
AD	118	36%	109	36%	9	39%
ADD	175	54%	163	54%	12	52%
RET	22	7%	21	7%	1	4%
OTH	10	3%	9	3%	1	4%
ADMITTED	22	7%	17	6%	5	22%

Displayed in Table 2 are data concerning ER utilization factors. The data suggest the majority of nonurgent and urgent beneficiaries traveled five miles or less to the ER. Beneficiaries coded nonurgent in some cases traveled greater than 15 miles; however, no beneficiary coded urgent traveled more than 15 miles for care.

A privately-owned vehicle is the predominant transportation mode to

the ER for both categories; however, beneficiaries coded urgent were more likely to use an ambulance. Average waiting time, which measures patient ER arrival time until seen by a physician, was lower for patients coded urgent. For patients coded urgent, the shortest waiting time was one minute and the longest waiting time was 149 minutes. Average treatment time, which measures time seen by a physician until released from the ER, was greater for urgent patient categories when compared to average treatment time for nonurgent patients. This greater treatment time most likely results from the severity or complex nature of the urgent health care problem. Nonurgent utilization was evident in all time class intervals; however, the greatest nonurgent utilization occurred between 1601 and 2400 hours. No urgent utilization was evident from 0401 to 0800 and similar to the nonurgent data, the greatest urgent use was from 1601 to 2400. The 1601 to 2400 hours class interval corresponds to off duty, after school time, and after work time patterns, which many soldiers and their dependents follow.

Using the sampled data depicted in Table 1 and 2, one can develop some useful nonurgent and urgent generalizations to describe the patients using the ER. The primary ER urgent user is generally a 14-year-old male, enlisted active duty dependent who is likely to be admitted, lives within five miles of the ER, and is transported to the ER in a privately-owned vehicle between 1601 and 2400. The general characteristics of the nonurgent user are somewhat different. The ER nonurgent user is most likely a 23-year-old female enlisted active duty dependent who is not likely to be admitted, lives within 5 miles of the ER, and is transported to the ER in a privately-owned vehicle between 1601 and 2400.

Table 2. ER Utilization Factors

	ALL	NONURGENT	URGENT
Distance Traveled			
≤ 5	176	162	14
5 ≥ 10	104	98	6
10 ≥ 15	23	20	3
> 15	23	22	0
Transportation to Hospital			
POV	289	269	20
AMB	8	7	1
OTH	28	26	2
Avg. Waiting Time		52 min.	34 min.
Avg. Treatment Time		33 min.	44 min.
Avg. Total Time		82 min.	49 min.
Visit Time			
0000-0400	28	26	2
0401-0800	16	16	0
0801-1200	63	59	4
1201-1600	53	50	3
1601-2000	80	72	8
2001-2400	85	79	6

Tables 3, 4, 5, and 6 depict status utilization patterns of the sampled beneficiaries. These tables clearly demonstrate active duty and active duty dependents are the greatest users of the ER. More importantly, these tables depict some specific characteristics of the ER users.

In Table 3, the data array demonstrates the ER is utilized by

very young patients who, on the average, are active duty or active duty dependents. For example, the class intervals spanning 20-years-old and younger represents 55% of the total active duty and active duty dependents in the sample. The class sample 14-years-old and younger alone represents 33% of the active duty and active duty dependents. These age class intervals have similiar proportions when studied within the nonurgent and urgent categories. This data suggest a demand for pediatric and emergency pediatric care .

TABLE 3. UTILIZATION BY AGE AND STATUS

ALL

	< 14	14 > 20	20 > 25	25 > 30	30 > 35	35 > 40	> 40
AD	0	45	35	24	10	2	1
ADD	99	19	16	7	15	4	19
RET	0	0	1	0	0	2	18
OTH	0	0	1	0	2	1	5

NONURGENT

	< 14	14 > 20	20 > 25	25 > 30	30 > 35	35 > 40	> 40
AD	0	35	31	24	10	2	1
ADD	90	18	16	7	15	4	19
RET	0	0	1	0	0	2	18
OTH	0	0	1	0	2	1	5

URGENT

	< 14	14 > 20	20 > 25	25 > 30	30 > 35	35 > 40	> 40
AD	0	5	4	0	0	0	2
ADD	9	1	0	0	0	0	1
RET	0	0	0	0	0	0	0
OTH	0	0	0	0	0	1	0

Table 4 demonstrates status utilization by sex. Overall, the greatest utilization is by males for both nonurgent and urgent categories of care. Male urgent utilization is much greater than female urgent utilization, while male and female nonurgent utilization is similiar. When considering only active duty and active

duty dependents, female active duty dependents are the primary users of the ER for nonurgent care, comprising 41% of the total active duty and active duty dependent ER patients and 50% of the nonurgent active duty and active duty dependent ER users. At the time of the sample, the OB-GYN clinic had a 180-day clinic appointment wait for active duty dependents. The assumption might be made that these female patients had no alternative but to go to the ER for their health care. From Table 1, we know that 45% of the nonurgent visits were made by junior enlisted soldiers and their dependents. Therefore, It might also be proposed this utilization is the result of military social and structure issues discussed earlier.

TABLE 4. UTILIZATION BY SEX AND STATUS

	ALL		NONURGENT		URGENT	
	M	F	M	F	M	F
AD	99	19	90	19	9	0
ADD	54	120	49	114	6	6
RET	21	1	20	1	1	0
OTH	6	4	5	4	1	0

Table 5 provides insight concerning status utilization by distance traveled to the ER. The data in Table 5 indicates patients coded nonurgent were willing to travel 15 or more miles for their health care. However, the data indicates tha patients coded urgent were not willing to travel more than 25 miles for ER care. It appears from the data that a relationship exists between utilization and distance from the patients home and the ER. It appears that Patients who live closest to the ER demonstrate a greater utilization of the ER. Consistent with the literature, the urgent use dropped dramaticaly at 15 miles. The class interval five miles or less includes the greater portion of the installation housing areas. This class interval depicts the greates utilization overall. However, 40% of the active duty and actice duty dependents traveled more than five miles. Any patient traveling more than five miles more than likely will have more problems with transportation because public transport is limited. On post, there is a bus system and the military community is generally supportive of its members because of organizational support groups.

Nonurgent users were apparent in all distance traveled class intervals; however, as distance increased, there was also a decline in nonurgent utilization.

TABLE 5. UTILIZATION BY DISTANCE TRAVELED AND STATUS

	MILES TRAVELED			
	< 5	5 > 10	10 > 15	> 15
ALL				
AD	104	10	1	3
ADD	72	75	16	12
RET		15	4	3
OTH		4	2	4
Nonurgent				
AD	95	10	1	3
ADD	67	70	14	12
RET		14	4	3
OTH		4	1	4
URGENT				
AD	9	0	0	0
ADD	5	5	2	0
RET	0	1	0	0
OTH	0	0	1	0

To further examine status utilization, Table 6 looks at status utilization by visit time. With this table, we see the greatest number of visits by all status groups occur after 1600 and before 2400. This increase in ER visits for this class interval is true for nonurgent and urgent patient categories. On Table 2, where six visit time class

intervals were used, recorded data indicated there was no urgent utilization 0401 to 0800. However nonurgent utilization occured in all class intervals.

TABLE 6. UTILIZATION BY VISIT TIME AND STATUS

	NONURGENT		
	0000-0800	0801-1600	1601-2400
AD	16	36	57
ADD	22	57	84
RET	3	7	11
OTH	1	8	0
	URGENT		
	0000-0800	0801-1600	1601-2400
AD	2	1	6
ADD	0	5	7
RET	0	0	1
OTH	0	1	0

According to Table 7, utilization during the 1601 to 2400 time class interval is high for junior enlisted coded as nonurgent. However, junior and senior enlisted exhibit similiar urgent utilization activity during this same time interval.

TABLE 7 UTILIZATION BY ARRIVAL TIME AND RANK

NONURGENT

	0000-0800	0801-1600	1601-2400
OF	0	2	4
OC	3	9	13
SE	12	35	43
JE	26	45	79
OTH	1	17	14

URGENT

	0000-0800	0801-1600	1601-2400
OF	0	0	0
OC	0	1	2
SE	0	4	5
JE	2	1	5
OTH	0	1	2

Conclusion

In conclusion this retrospective demographic study of MACH's ER utilization indicates the MACH ER is primarly utilized by patients coded as nonurgent. A significant amount of primary care is being administered after hours (1600 to 2400) to a generally very young population, with a large number of female patients. Many of these patients are junior enlisted soldiers or their dependents who generally have the least education, experience and personal autonomy. Often the economic situation of the junior enlisted is weak, limiting

transportation options, requiring working spouses, and/or demanding moonlighting deals which all limit the patients ability to acess the healthcare system and his opportunity to seek health care.

Nonurgent and urgent patients have similiar general characteristics: enlisted active duty dependent, traveling less than 10 miles by POV, and arrives at the ER between 1600 and 2400. However, the two categories' general characteristics differ concerning age, sex, and admission rate. The nonurgent patient on the average is a 23-year-old female who is unlikely to be admitted, while the urgent patient on the average is a 14-year-old male who is admitted 20% of the time.

Junior enlisted and their dependents tend to use the ER more frequently for nonurgent care than any other rank. The age distribution evident in this high nonurgent utilization indicates a need for pediatric care. Also, there is a high female utilization demonstrated by these nonurgent junior enlisted users, indicating a possible obstetrics and gynecology need.

Recommendations

This study presents demographic data which suggest four major concerns. Each of these concerns require further study to determine their magnitude and full implications. These four concerns with recomendation, are as follow:

(1) Concern: Do beneficiaries understand MACH'S provision of health care?

Recomendation: Develope and implement a comphrehensive marketing plan to educate the beneficiary. Special attention should be given to junior enlisted soldiers and their leadership.

(2) Concern: Does an after hour pediactric care clinic need exist?

Recomendation: A pediatric needs assesment study should be conducted.

(3) Concern: Does an after-hour OB-GYN clinic need exist?

Recomendation: An OB-GYN clinic needs assesment study

should be conducted.

(4) Concern: Does an after hour primary care clinic need exist?

Recomendation: An after hour primary care clinic needs assesment study should be conducted.

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